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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/707,781

**Applicant(s)**

OLSSON, KARL-ERIK

**Examiner**

HERNG-DER DAY

**Art Unit**

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2007 and 05 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,5,7,9,11 and 14-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,9,11 and 14-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsman's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 1/23/08
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This communication is in response to Applicant's Response ("Response") to Office Action dated December 19, 2006, filed May 24, 2007 and July 5, 2007.

1-1. Claims 1, 5, 14, and 27 have been amended. Claims 2, 4, 6, 8, 10, 12, 13, and 28 have been canceled. Claims 1, 3, 5, 7, 9, 11, and 14-27 are pending.

1-2. Claims 1, 3, 5, 7, 9, 11, and 14-27 have been examined and rejected.

#### ***Information Disclosure Statement***

2. The information disclosure statement filed January 23, 2008, fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance for the non-patent literature document cite no. 2, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to has not been considered.

#### ***Drawings***

3. The drawings filed on January 12, 2004, are objected to for the following reasons. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include **all** of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**3-1.** The label of Y axis “T/To - 1” as shown in FIG 2 and FIG 3 is inconsistent with the description in, for example, paragraph [0060].

### ***Specification***

**4.** The replacement paragraphs filed on May 24, 2007, are objected to because of the following informalities. Appropriate correction is required.

**4-1.** It appears that “Fa” as shown in the replacement paragraph [0035] should be “Fo”.

**4-2.** It appears that the replacement paragraph [0058] is incomplete. Furthermore, “ $S^2/(4*\alpha)$ ” as shown in line 1 of the replacement paragraph [0058] should be “ $S^2/(4*\alpha)$ ”.

**4-3.** It appears that “and n 1” as described in line 2 of the replacement paragraph [0097] should be “and n1”.

**5.** The Examiner thanks Applicant’s submitting a copy of each document referred to in paragraph [0119] of the specification. The non-patent literature document cite no. 1 filed January 23, 2008, has been translated into English by USPTO.

### ***Claim Rejections - 35 USC § 112***

**6.** The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1, 3, 5, 7, 9, 11, and 14-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

7-1. Independent claim 1 recites the limitation, “utilizing the values for the total temperature as a measure of said damage” in line 8 of claim 1 and independent claim 27 recites the limitation, “utilizing the values for the total temperature as a measure of said damage” in line 10 of claim 27. However, to calculate the damage values D1 or D2, as shown in the equation in paragraph [0093] or [0094] respectively, S has not been specifically defined. On the other hand, S may be interpreted as thickness of disk as shown in paragraph [0041] or [0051]. Therefore, without undue experimentation, it is unclear for one skilled in the art how to calculate the damage values D1 or D2 with S undefined or how to use the calculated damage values D1 or D2 with S being defined as thickness of disk.

7-2. Claims not specifically rejected above are rejected as being dependent on a rejected claim.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 3, 5, 7, 9, 11, and 14-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9-1. Claims 1 and 27 recite the limitation, “utilizing the sets used for temperature-increase calculation and making a selection depending on at least a material property of the rotary

member” at the end of each claim which is vague and indefinite because “making *what* selection (or making a selection of *what*) depending on at least a material property of the rotary member” is unclear. Clarification of the metes and bounds, via clearer claim language, is requested.

**9-2.** Claim 11 recites the limitation “the nature of the rotary member” at the end of the claim. There is insufficient antecedent basis for this limitation in the claim.

**9-3.** Claim 18 recite the limitation “the number of loading cycles” at lines 2-3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

**9-4.** Claims not specifically rejected above are rejected as being dependent on a rejected claim.

### ***Claim Interpretation***

**10.** Independent claims 1 and 27 recite the limitation, “making a selection depending on at least a material property of the rotary member” at the end of each claim which is vague and indefinite because “making *what* selection (or making a selection of *what*) depending on at least a material property of the rotary member” is unclear. For the purpose of claim examination with the broadest reasonable interpretation, the Examiner will interpret the limitation, “making a selection depending on at least a material property of the rotary member” as “making a selection of each constant in the formulas disclosed by Hara et al. in column 3, line 62 through column 4, line 9 of U.S. Patent 5,723,779, depending on at least a material property of the multiple friction clutch 11a”.

***Claim Rejections - 35 USC § 102***

**11.** The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**12.** Claims 1, 3, 5, 7, 9, 11, 14-19, and 22-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Hara et al., U.S. Patent 5,723,779 issued March 3, 1998.

**12-1.** Regarding claim 1, Hara et al. disclose a method for predicting life-affecting damage on a rotary member to be subjected to repeated loading during operation, said method comprising:

measuring a number of operating parameters (for example, control oil pressure, loading time, column 3, lines 38-56) and calculating a temperature increase during each loading based on said operating parameters (*k<sub>3</sub>Ect*, column 4, line 9);

calculating a total temperature in a part of the rotary member for each loading by summation of a basic temperature of the rotary member before the loading concerned and said temperature increase (*Temp*, column 4, lines 6-9);

utilizing the values for the total temperature as a measure of said damage and wherein that part of the rotary member for which the total temperature is calculated defines a surface acted on when the rotary member is loaded (facing temperatures, column 4, lines 11-23) and two sets of predetermined functions (K, L; M, N), each comprising at least one function, are used for temperature-increase calculation (formulas, column 3, line 62 through column 4, line 4); and

utilizing the sets used for temperature-increase calculation (formulas, column 3, line 62 through column 4, line 9) and making a selection depending on at least a material property of the

rotary member (determining constants in the formulas, column 3, line 62 through column 4, line 9).

**12-2.** Regarding claim 3, Hara et al. further disclose wherein the time for which the rotary member (2) is applied is measured, and in the set of functions (K, L; M, N) which is used for each specific temperature-increase calculation is also selected depending on this time (measuring a loading time, column 3, lines 46-49).

**12-3.** Regarding claim 5, Hara et al. further disclose wherein a constant ( $F_0$ ) is calculated after every loading on the basis of both the nature of the rotary member and the loading time ( $\Delta N \cdot t$ , column 4, lines 6-9), in that when a calculated value of the constant lies below a predetermined limit value, a first set of functions is used, and in that when a calculated value lies above said limit value, a second set of functions is used (derived from the formulas, Temp is a function of  $\Delta N \cdot t$ , column 3, line 62 through column 4, line 4).

**12-4.** Regarding claim 7, Hara et al. further disclose wherein the specific function (M1, M2; N1, N2) which is to be used for temperature-increase calculation is selected from a specifically selected set of functions depending on loading type (loaded energy, column 4, lines 1-4).

**12-5.** Regarding claim 9, Hara et al. further disclose wherein each of said sets comprises only one function (K, L), which is thus selected irrespective of loading type (Temp, column 4, lines 6-9).

**12-6.** Regarding claim 11, Hara et al. further disclose wherein each of the graphs of said functions has such a shape that a logarithmic first expression for the temperature increase changes linearly as a function of a logarithmic second expression for the nature of the rotary member (derived from the formula:  $\text{Temp} - T_{\text{oil}} = k_3 \cdot Ec \cdot t$ , column 4, lines 6-9).



**12-7.** Regarding claim 14, Hara et al. further disclose wherein said second expression is calculated as a power function of a result of the duration in time of the loading divided by a value for the at least a material property of the rotary member (derived from the formula:  $t/(1/AN)$ , column 4, lines 1-9).

**12-8.** Regarding claim 15, Hara et al. further disclose wherein the total temperature value produced, or a converted damage value, for each loading instance is stored in a position in a memory, which position defines a specific temperature range or damage range (predetermined temperature ranges, column 4, lines 11-23).

**12-9.** Regarding claim 16, Hara et al. further disclose wherein the damage or consumed life is calculated on the basis of the number of times each specific range has been reached (real application totalizing times, column 4, lines 54-66) and knowledge of the damage durability of, the rotary member (life average values, column 4, lines 38-51).

**12-10.** Regarding claim 17, Hara et al. further disclose wherein the damage or the consumed life is calculated with a part damage theory (indicates a life which has been consumed, column 4, line 11 through column 5, line 19).

**12-11.** Regarding claim 18, Hara et al. further disclose wherein the relationship between the total temperature and the number of loading cycles is described as a power function (real application totalizing times, column 4, lines 54-66).

**12-12.** Regarding claim 19, Hara et al. further disclose wherein the time between two successive loadings is determined, and a new basic temperature for the later loading is determined (detecting a temperature of working fluid, column 3, lines 44-46).

**12-13.** Regarding claim 22, Hara et al. further disclose wherein the measured operating parameters comprise pressure applied to the rotary member, rotational speed of the rotary

member and also the time for which the rotary member is applied (control oil pressure, differential revolution, loading time, column 3, lines 38-56).

**12-14.** Regarding claim 23, Hara et al. further disclose wherein the rotary member is disk-shaped (multiple friction clutch, column 3, lines 38-41).

**12-15.** Regarding claim 24, Hara et al. further disclose wherein the rotary member consists of a disk in a clutch or brake (multiple friction clutch, column 3, lines 38-41).

**12-16.** Regarding claim 25, Hara et al. further disclose wherein the rotary member consists of a gearwheel in a gear train (multiple friction clutch, column 3, lines 38-41).

**12-17.** Regarding claim 26, Hara et al. further disclose wherein the rotary member consists of a component of a vehicle (multiple friction clutch, column 3, lines 1-14).

**12-18.** Regarding claim 27, the computer program product claim includes equivalent method limitations as in claim 1 and is anticipated using the same analysis of claim 1.

### ***Claim Rejections - 35 USC § 103***

**13.** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**14.** Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al., U.S. Patent 5,723,779 issued March 3, 1998, as applied to claim 19, in view of Lauster et al., “Thermic Computations in Multiple-Disk Clutches”, translated into English by USPTO from

“Wärmetechnische Berechnungen bei Lamellenkupplungen”, VD1-Z 115 (1973), pages 122-126, (IDS filed January 23, 2008, non-patent literature document cite no. 1).

**14-1.** Regarding claim 20, Hara et al. fail to expressly disclose wherein for a large number of successive loadings, the new basic temperature for a later loading is calculated with the aid of an expression for a cooling process of the rotary member after a preceding loading has ended.

Lauster et al. disclose in section 6, paragraph 1, “As indicated in Figure 1, for computing the long-term loading of the disks a sequence of idealized operating cycles can be assumed. For temperatures this means that the final temperature upon cooling in the first cycle forms the initial temperature for the re-heating in the next cycle, etc.”

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hara et al. to incorporate the teachings of Lauster et al. because, as Lauster et al. suggested in section 6, paragraph 1, for computing the long-term loading of the disks a sequence of idealized operating cycles can be assumed.

**14-2.** Regarding claim 21, Hara et al. further disclose wherein over a relatively long time interval between two loadings, a temperature on the rotary member is measured, and this temperature value is then used as a new basic temperature for a subsequent loading (oil temperature  $T_{oil}$ , column 3, line 62 through column 4, line 9).

### *Applicants' Arguments*

**15.** Applicant argues the following:

#### **15-1. OBJECTION TO THE DRAWINGS**

(1) “With the included clarifying amendments to paragraph [0060], it is believed to overcome objection to the drawing.” (Page 9, the last paragraph, Response)

**15-2. CLAIMS REJECTIONS - 35 USC § 112**

(2) “Based on that bank of knowledge, it is known that the quantity “S” refers to applied stress or stress amplitude, which in the case of the present invention is produced by pressure application against a rotary member.” (Page 11, paragraph 3, Response)

(3) “For the reasons given, applicant submits that the identity of the term “S” is well known to one of ordinary skill in the art.” (Page 11, paragraph 4, Response)

(4) “Claims 2 and 28 have been cancelled and claims 1, 5, 18, and 27 have been amended to better provide antecedent basis in order to overcome the rejection under 35 U.S.C. §112, 2nd paragraph”. (Page 12, paragraph 2, Response)

**15-3. CLAIMS REJECTIONS - 35 USC § 102**

(5) “Hara et al. lacks teaching of the nature and property changes of the rotary member since no portion of the reference was cited as providing teachings of these limitations.” (Page 13, paragraph 3, Response)

(6) “It appears that the rejection relies upon temperature determination, but ignores the difference between Hara et al. and claim 1 of the present invention. The difference exists in the material or object for which the temperature is measured. Hara et al. measures the temperature of the working fluid that drives the clutch. As claimed, the present invention makes direct measurement of the temperature of the rotary member (the clutch in the case of Hara et al.)” (Page 14, paragraph 1, Response)

(7) “Regardless of the interpretation, there is nothing in Hara et al. suggesting direct measurement of the temperature of the rotary member as required by claim 1 of the present invention.” (Page 15, paragraph 1, Response)

(8) "Claim 1 has been amended to replace recitation of the term "nature" by -- at least a material property --. Hara et al. neither describes the clutch in terms of material selection or properties nor the external dimensions of the rotary member." (Page 15, paragraph 4, Response)

(9) "Independent claim 27 also recites limitations not found in Hara et al. including, "a total temperature in a part of the rotary member" and "basic temperature of the rotary member before the loading" and "at least ~~the nature~~ a material property of the rotary member." Omission of these limitations from the teachings of Hara et al. provides evidence that the reference fails to meet the requirements for anticipation of the present invention under 35 U.S.C. §102(b)." (Page 16, paragraph 4, Response)

(10) "The Office Action does not appear to contain evidence of examination of claims 20 and 21 of the present application except with regard to the requirements of 35 U.S.C. § 112. Acceptable amendment overcoming rejection under 35 U.S.C. §112, 1st and 2nd paragraphs should place claims 20 and 21 in condition for allowance." (Page 16, paragraph 6, Response)

### ***Response to Arguments***

**16.** Applicant's arguments have been fully considered.

**16-1.** Applicant's argument (1) is not persuasive. The label of Y axis as shown in FIG 2 and FIG 3 is " $T/T_o - 1$ " which appears to be different from " $\Delta T/\Delta T_o - 1$ " as shown in equation (4) unless  $T = \Delta T$  and  $T_o = \Delta T_o$ .

**16-2.** Applicant's arguments (2) and (3) are not persuasive. First, Applicant's argument and interpretation, "the quantity "S" refers to applied stress or stress amplitude, which in the case of the present invention is produced by pressure application against a rotary member" does not appear to have support in the original disclosure. Second, S may alternatively be interpreted as

thickness of disk as defined in paragraph [0041] or [0051] of the specification. Therefore, Applicant's arguments are not persuasive.

**16-3.** Applicant's argument (4) is persuasive. The rejections of claims 1-10, 12-13, 15-17, and 19-28 under 35 U.S.C. 112, second paragraph, in Office Action dated December 19, 2006, have been withdrawn.

**16-4.** Applicant's arguments (5) and (8) are not persuasive. In response to Applicant's argument that the references fail to show certain features of Applicant's invention, it is noted that the features upon which Applicant relies (i.e., "the nature and property *changes* of the rotary member", "material *selection*", and "the *external dimensions* of the rotary member") are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In other words, Applicant's arguments are not persuasive because the argued features have not been recited in the rejected claim.

**16-5.** Applicant's arguments (6) and (7) are not persuasive. Applicant's argument "the present invention makes direct measurement of the temperature of the rotary member" does not appear to have support in the original disclosure. As described in the specification in paragraph [0079], "it is assumed that, in the relatively long time interval, *the brake disk has approximately the same temperature as the coolant.*" and in paragraph [0033], "A description is given below of, first, *calculation* of a maximum temperature increase on the surface and, then, *calculation* of the basic temperature for a subsequent brake application." Applicant is requested to provide evidence to support Applicant's arguments.

**16-6.** Applicant's argument (9) is not persuasive. Hara et al. disclose in column 3, line 62 through column 4, line 9, formulas for calculating the clutch facing temperature (a total

temperature) based on the oil temperature (basic temperature) and the constants based on the specific multiple friction clutch 11a (a material property), which anticipate argued limitations.

**16-7.** Applicant's argument (10) is not persuasive. Claims 20 and 21 are still rejected under 35 U.S.C. § 112, 1st and 2nd paragraphs. Furthermore, claims 20 and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hara et al., U.S. Patent 5,723,779, in view of Lauster et al., "Thermic Computations in Multiple-Disk Clutches".

### ***Conclusion***

**17.** Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) has been waived on January 23, 2008, also prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

18. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Herng-der Day whose telephone number is (571) 272-3777. The Examiner can normally be reached on 9:00 - 17:30.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: (571) 272-2100.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kamini S. Shah can be reached on (571) 272-2279. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kamini S Shah/  
Supervisory Patent Examiner, Art Unit 2128

/Herng-der Day/  
Examiner, Art Unit 2128

November 24, 2008